

# UNCLASSIFIED

## CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification								DATE:			
								February 2002			
APPROPRIATION/BUDGET ACTIVITY						R-1 ITEM NOMENCLATURE					
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-5						0604245N USMC H-1 Upgrades					
COST (\$ in Millions)	Prior Years Cost		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program
Total PE Cost	455.611		133.324	170.448	241.384	80.547	54.506				1,135.820
H2279 USMC H-1 Upgrades	455.611		133.324	170.448	241.384	80.547	54.506				1,135.820
Quantity of RDT&E Articles	5										5
Quantity of (5) RDT&E Engineering and Manufacturing Development (EMD) test articles were placed on contract prior to FY98 and remanufacture commenced in FY99. One aircraft will be used for live fire test and evaluation.											
A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The mission of the AH-1W attack helicopter is to provide rotary wing close air support, anti-armor, armed escort, armed/visual reconnaissance and fire support coordination capabilities under day/night and adverse weather conditions. The mission of the UH-1N utility helicopter is to provide command and control and combat assault support under day/night and adverse weather conditions and special operations support; supporting arms coordination and aeromedical evacuation. Major modifications for both aircraft that remanufacture AH-1W/UH-1N's into AH-1Z/UH-1Y's include: a new 4-bladed, composite rotor system with semi-automatic blade fold, new performance matched transmissions, T700 Engine Digital Electronic Control Units (DECUs), new 4-bladed tail rotors and drive systems, more effective stabilizers, upgraded landing gear, tail pylon structural modifications, and common, fully integrated cockpits and avionics systems. This remanufacture will add 10,000 flight hours to AH-1Z/UH-1Y airframes. The fully integrated cockpits will reduce operator workload and improve situational awareness, thus increasing safety and reducing the rate of aircraft attrition. They will provide considerable growth potential for future weapon systems and avionics, which will significantly increase mission effectiveness and survivability. The cockpits will also include integration of on-board mission planning, communications, digital fire control, self-navigation, night targeting, and weapon systems management in nearly identical crew stations reducing training requirements. This remanufacture maximizes commonality between the two aircraft and provides needed improvements in crew and passenger survivability, payload, power available, endurance, range, airspeed, maneuverability and supportability.											
(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under Engineering and Manufacturing Development because it encompasses engineering and manufacturing development of new end-items prior to a production approval decision.											

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## CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE:			
								February 2002			
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME					PROJECT NUMBER AND NAME					
RDT&E, N / BA-5	0604245N USMC H-1 Upgrades					H2279 USMC H-1 Upgrades					
COST (\$ in Millions)	Prior Years Cost		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program
Project Cost	455.611		133.324	170.448	241.384	80.547	54.506				1,135.820
RDT&E Articles Qty	5										5
Quantity of (5) RDT&E Engineering and Manufacturing Development (EMD) test articles were placed on contract prior to FY98 and remanufacture commenced in FY99. One aircraft will be used for live fire test and evaluation.											
A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The mission of the AH-1W attack helicopter is to provide rotary wing close air support, anti-armor, armed escort, armed/visual reconnaissance and fire support coordination capabilities under day/night and adverse weather conditions. The mission of the UH-1N utility helicopter is to provide command and control and combat assault support under day/night and adverse weather conditions and special operations support; supporting arms coordination and aeromedical evacuation. Major modifications for both aircraft that remanufacture AH-1W/UH-1N's into AH-1Z/UH-1Y's include: a new 4-bladed, composite rotor system with semi-automatic blade fold, new performance matched transmissions, T700 Engine Digital Electronic Control Units (DECUs), new 4-bladed tail rotors and drive systems, more effective stabilizers, upgraded landing gear, tail pylon structural modifications, and common, fully integrated cockpits and avionics systems. This remanufacture will add 10,000 flight hours to AH-1Z/UH-1Y airframes. The fully integrated cockpits will reduce operator workload and improve situational awareness, thus increasing safety and reducing the rate of aircraft attrition. They will provide considerable growth potential for future weapon systems and avionics, which will significantly increase mission effectiveness and survivability. The cockpits will also include integration of on-board mission planning, communications, digital fire control, self-navigation, night targeting, and weapon systems management in nearly identical crew stations reducing training requirements. This remanufacture maximizes commonality between the two aircraft and provides needed improvements in crew and passenger survivability, payload, power available, endurance, range, airspeed, maneuverability and supportability.											
(U) PROGRAM ACCOMPLISHMENTS AND PLANS:											
1. FY 2001 ACCOMPLISHMENTS:											
- (U) (\$ 49.589) Conducted pre-flight ground test and first flight of AH-1Z; continued mission computer software coding.											
- (U) (\$ 14.893) Completed transmission bench testing and aircraft drive train validation.											
- (U) (\$ 45.436) Continue tooling validation and assembly of remaining EMD aircraft including structural testing.											
- (U) (\$ 22.706) Continued integrated logistics support (ILS) tasks including level of repair analysis, failure modes effects and criticality analysis, logistics support analysis, reliability centered maintenance analysis, integrated mechanical diagnostics, and documentation.											
- (U) (\$ .700) Continued live fire testing and evaluation.											

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APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-5</b>	PROGRAM ELEMENT NUMBER AND NAME 0604245N USMC H-1 Upgrades	PROJECT NUMBER AND NAME H2279 USMC H-1 Upgrades
<p>(U) PROGRAM ACCOMPLISHMENTS AND PLANS:</p> <p>2. FY 2002 PLANS:</p> <ul style="list-style-type: none"><li>- (U) (\$ 87.995) Conduct pre-flight ground test and first flight of UH-1Y, conduct high-altitude performance tests, handling qualities, gearbox tear-down/inspection. Continue tooling validation and assembly of remaining EMD aircraft including structural test.</li><li>- (U) (\$ 18.434) Conduct external stores jettison test, firing loads and vibrations, and weapons system accuracy,</li><li>- (U) (\$ 48.353) Conduct Integrated Avionics System (IAS) and weapons system evaluation.</li><li>- (U) (\$ 7.555) Continue program development testing and live fire test and evaluation.</li><li>- (U) (\$ 3.009) Continue ILS tasks including level of repair analysis, logistics support analysis, reliability centered maintenance analysis, integrated mechanical diagnostics.</li><li>- (U) (\$ 5.102) Portion of extramural program reserved for Small Business Innovative Research assessment in accordance with 15 USC 638.</li></ul> <p>3. FY 2003 PLANS:</p> <ul style="list-style-type: none"><li>- (U) (\$180.280) Continue engineering and technical design and development efforts, conduct Integrated Avionics System (IAS) testing and validation.</li><li>- (U) (\$ 14.593) Continue program development testing and integrated flight test program efforts including non-firing loads and vibrations, seat trials, IAS validation, structural demonstration, firing loads and vibrations, weapons system accuracy and Operational Test Readiness Review (OTRR).</li><li>- (U) (\$ 46.511) Continue engineering, training and logistics support efforts including level of repair analysis, logistics support analysis, reliability centered maintenance, and integrated mechanical diagnostics.</li></ul>		

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<p>(U) B. PROGRAM CHANGE SUMMARY:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: right;">FY 2001</th> <th style="text-align: right;">FY 2002</th> <th style="text-align: right;">FY 2003</th> </tr> </thead> <tbody> <tr> <td>(U) FY 2002 President's Budget:</td> <td style="text-align: right;">138.189</td> <td style="text-align: right;">170.068</td> <td></td> </tr> <tr> <td>(U) Adjustments from the FY 2002 President's Budget:</td> <td style="text-align: right;">-4.865</td> <td style="text-align: right;">0.380</td> <td></td> </tr> <tr> <td>(U) FY 2003 President's Budget Submit:</td> <td style="text-align: right;">133.324</td> <td style="text-align: right;">170.448</td> <td style="text-align: right;">241.384</td> </tr> </tbody> </table> <p>CHANGE SUMMARY EXPLANATION:</p> <p>(U) Funding: The FY 2001 net decrease of \$4.865 million reflects a decrease of \$4.227 million for a Small Business Innovation Research assessment and a reduction of \$0.638 million for reprioritization of requirements within the Navy. The FY 2002 net increase of \$0.380 million reflects an increase of \$1.900 million for non-recurring engineering of T700-GE-401C engines offset by a decrease of \$1.520 million for an undistributed congressional reduction.</p> <p>(U) Schedule: Not applicable.</p> <p>(U) Technical: Not applicable.</p> <p>(U) C. OTHER PROGRAM FUNDING SUMMARY:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><u>Line Item No. &amp; Name</u></th> <th style="text-align: right;">FY 2001</th> <th style="text-align: right;">FY 2002</th> <th style="text-align: right;">FY 2003</th> <th style="text-align: right;">FY 2004</th> <th style="text-align: right;">FY 2005</th> <th style="text-align: right;">FY 2006</th> <th style="text-align: right;">FY 2007</th> <th style="text-align: right;">To Complete</th> </tr> </thead> <tbody> <tr> <td>P-1 LI #7, UH-1Y/AH-1Z (4BN/4BW)</td> <td style="text-align: right;">5.987</td> <td style="text-align: right;">0</td> <td style="text-align: right;">0</td> <td style="text-align: right;">282.824</td> <td style="text-align: right;">254.568</td> <td style="text-align: right;">416.022</td> <td style="text-align: right;">465.283</td> <td style="text-align: right;">3253.038</td> </tr> <tr> <td>Quantity</td> <td style="text-align: right;">0</td> <td style="text-align: right;">0</td> <td style="text-align: right;">0</td> <td style="text-align: right;">9</td> <td style="text-align: right;">11</td> <td style="text-align: right;">22</td> <td style="text-align: right;">28</td> <td style="text-align: right;">210</td> </tr> </tbody> </table> <p>FY01, FY02 and FY03 Integrated Mechanical Diagnostics (IMD) development is redirected to P.E. 0604245N</p> <p><u>Related RDT&amp;E:</u></p> <p>(U) P.E. 0604212N, ASW &amp; Other Helo Development</p> <p>(U) P.E. 0603266N, AH-1T Composite Rotor Blade</p>									FY 2001	FY 2002	FY 2003	(U) FY 2002 President's Budget:	138.189	170.068		(U) Adjustments from the FY 2002 President's Budget:	-4.865	0.380		(U) FY 2003 President's Budget Submit:	133.324	170.448	241.384	<u>Line Item No. &amp; Name</u>	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Complete	P-1 LI #7, UH-1Y/AH-1Z (4BN/4BW)	5.987	0	0	282.824	254.568	416.022	465.283	3253.038	Quantity	0	0	0	9	11	22	28	210
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EXHIBIT R-2a, RDT&E Project Justification			DATE: <b>February 2002</b>																										
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-5</b>	PROGRAM ELEMENT NUMBER AND NAME 0604245N USMC H-1 Upgrades	PROJECT NUMBER AND NAME H2279 USMC H-1 Upgrades																											
<p>(U) D. ACQUISITION STRATEGY: The H-1 Upgrades is an ACAT ID program which encompasses Engineering and Manufacturing Development of new end-items prior to a production approval decision. The prime contract is sole source to Bell Helicopter Textron, Inc. and is a remanufacture of AH-1W and UH-1N aircraft.</p> <p>(U) E. SCHEDULE PROFILE:</p> <table border="0"> <thead> <tr> <th></th> <th><u>FY 2001</u></th> <th><u>FY 2002</u></th> <th><u>FY 2003</u></th> <th><u>TO COMPLETE</u></th> </tr> </thead> <tbody> <tr> <td>(U) Program Milestones</td> <td></td> <td></td> <td></td> <td>1Q/04 UH/AH LRIP #1 1Q/05 UH/AH LRIP #2 4Q/05 AH-1Z/UH-1Y MS III 1Q/06 UH/AH FRP</td> </tr> <tr> <td>(U) Engineering Milestones</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) T&amp;E Milestones</td> <td>1Q/01 1st Flight AH-1Z 2Q/01-4Q/01 UH/AH Test</td> <td>1Q/02-4Q/02 UH/AH Test 1Q/02 1st Flight UH-1Y</td> <td>1Q/03-4Q/04 UH/AH Test</td> <td>4Q/04-2Q/05 UH/AH OPEVAL</td> </tr> <tr> <td>(U) Contract Milestones</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>						<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>TO COMPLETE</u>	(U) Program Milestones				1Q/04 UH/AH LRIP #1 1Q/05 UH/AH LRIP #2 4Q/05 AH-1Z/UH-1Y MS III 1Q/06 UH/AH FRP	(U) Engineering Milestones					(U) T&E Milestones	1Q/01 1st Flight AH-1Z 2Q/01-4Q/01 UH/AH Test	1Q/02-4Q/02 UH/AH Test 1Q/02 1st Flight UH-1Y	1Q/03-4Q/04 UH/AH Test	4Q/04-2Q/05 UH/AH OPEVAL	(U) Contract Milestones				
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(U) T&E Milestones	1Q/01 1st Flight AH-1Z 2Q/01-4Q/01 UH/AH Test	1Q/02-4Q/02 UH/AH Test 1Q/02 1st Flight UH-1Y	1Q/03-4Q/04 UH/AH Test	4Q/04-2Q/05 UH/AH OPEVAL																									
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Exhibit R-3 Cost Analysis (page 1)								DATE: <b>February 2002</b>				
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-5</b>			PROGRAM ELEMENT 0604245N USMC H-1 Upgrades			PROJECT NUMBER AND NAME H2279 USMC H-1 Upgrades						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Major Contract	SS CPFF	Bell Helicopter, Ft. Worth, TX	7.851								7.851	7.851
Award Fees*		Bell Helicopter, Ft. Worth, TX	12.668								12.668	12.688
Major Contract	SS CPIF*	Bell Helicopter, Ft. Worth, TX	374.140	118.765	10/00	135.200	10/01	201.658	10/02	93.458	923.221	923.221
GFE	Various	Various	11.318	1.699	Various	2.580	Various	3.000	Various	3.985	22.582	
In-House Support (Field Activities)	WR	Various	35.567	3.493	Various	1.486	Various	4.081	Various	4.025	48.652	
In-House Support (Field Activities)	WR	NAWC Patuxent River		2.969	Various	8.900	Various	11.736	Various	10.853	34.458	
In-House Support (Field Activities)	WR	NADEP Cherry Point		1.523	Various	2.116	Various	2.019	Various	1.236	6.894	
In-House Support (Field Activities)	WR	NAWC Lakehurst		1.554	Various	2.734	Various	1.810	Various	0.594	6.692	
In-House Support (Field Activities)	WR	NAWC China Lake		1.253	Various	1.582	Various	1.650	Various	1.410	5.895	
In-House Support (Travel)	WR	Various	0.987	0.250	10/00	0.350	10/01	0.260	10/02	0.510	2.357	
Trainers	WR	Various	4.564	0.118	12/00	0.450	11/01	0.610	12/02	0.722	6.464	
Subtotal Product Development			447.095	131.624		155.398		226.824		116.793	1,077.734	
<p>*Remarks: Effective 1 May 00, cost plus incentive fee (CPIF) applies. Original contract was was a SS CPAF contract. Total award fee pool \$47,496,152, and to date \$12,668,250 has been awarded. Period #1 was 90%, period #2 87%, period #3 90%, period #4 77%, period #5 76%, and period #6 was 0%. Award fee activity was terminated on 30 April 2000.</p>												
Technical Engineering Services	C FFP	CCI, Inc.	1.855	0.624	11/00	0.745	11/01	0.495	11/02	0.665	4.384	4.384
Subtotal Support			1.855	0.624		0.745		0.495		0.665	4.384	
Remarks:												

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Exhibit R-3 Cost Analysis (page 2)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-5			0604245N USMC H-1 Upgrades			H2279 USMC H-1 Upgrades						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Test and Evaluation	WR	NAWC Patuxent River	3.190	0.660	11/00	8.645	11/01	13.570	11/02	16.930	42.995	
Subtotal T&E			3.190	0.660		8.645		13.570		16.930	42.995	
Remarks:												
Program Office & Logistics Support	C FFP	CCI, Inc.	3.471	0.416	11/00	0.540	11/01	0.495	11/02	0.665	5.587	5.587
SBIR Assessment						5.120					5.120	
Subtotal Management			3.471	0.416		5.660		0.495		0.665	10.707	
Remarks:												
Total Cost			455.611	133.324		170.448		241.384		135.053	1,135.820	
Remarks:												

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